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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,450	02/20/2002	John S. Foong	4808	7381

7590

08/31/2004

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EXAMINER

ILDEBRANDO, CHRISTINA A

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 08/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/079,450

Applicant(s)

FOONG ET AL.

Examiner

Christina Ildebrando

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-9, 13-31 is/are rejected.
- 7) ☒ Claim(s) 10-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 28, 2004 has been entered.

### ***Allowable Subject Matter***

2. The indicated allowability of claim 3 is withdrawn upon reconsideration of Deeba et al. (US 5,974,057). Rejections based on the newly cited reference(s) follow.

### ***Claim Objections***

3. Claim 3 is objected to because of the following informalities: claim 3 depends from cancelled claim 2. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 3-6, 8-9, 13-21, 23-26, and 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Deeba et al.

Deeba et al. (US 5,874,057) discloses a NO<sub>x</sub> trap composition useful in the purification of exhaust gas. The composition comprises a NO<sub>x</sub> sorbent material and a NO<sub>x</sub> abatement catalyst, including a catalytic metal (column 2, lines 65-69). Deeba et al. teaches that the composition is characterized by the catalytic metal components being segregated from the NO<sub>x</sub> sorbent materials (column 3, lines 5-10). The reference teaches that the composition may be in layer form on a substrate, with a first layer containing the NO<sub>x</sub> sorbent material and the second layer formed in the first containing the NO<sub>x</sub> abatement catalyst (column 7, lines 55-65 and Figure 1). The composition may also contain an intermediate layer (column 7, lines 20-30).

The NO<sub>x</sub> sorbent material comprises at least one basic oxygenated metal compound and may be dispersed on a refractory support material such as alumina or present in bulk form (column 8, lines 15-20). Suitable compounds include oxides of magnesium, calcium, strontium, and barium (column 8, lines 15-30). This metal oxide is present in amounts of 0.05 to 3 g/in<sup>3</sup> (column 8, lines 30-35).

The NO<sub>x</sub> abatement catalyst comprises a platinum catalytic metal component and optionally, one or more other platinum group metal components such as palladium and rhodium (column 9, lines 1-10). It is taught that in a typical composition, the amount of platinum group metal will be from about 5-150 g/ft<sup>3</sup>, and of that amount, platinum will typically comprise about 4-125 g/ft<sup>3</sup> (column 9, lines 15-21). It is taught that the catalytic

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metal is supported on gamma alumina, which may be stabilized with lanthanum or other rare earth oxides (column 9, lines 20-45).

The compositions may be formed as layers on a monolithic structure such as a cordierite honeycomb structure (column 9, lines 24-26).

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Deeba et al.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba et al. as applied above for claims 3-6, 8-9, 13-21, 23-26, and 28-31.

The teachings of Deeba et al. are as described above for claims 3-6, 8-9, 13-21, 23-26, and 28-31.

With regards to claim 27, the difference between the reference and the claims is that the reference does not disclose that the lanthanum oxide in the overcatalyst layer is present in an amount of 0.02 to about 0.5 g/in<sup>3</sup> of carrier. However, Deeba et al. does teach that the lanthanum oxide serves to thermally stabilize the aluminum oxide, which would ensure a high heat resistance for the catalyst (column 9, lines 30-45), which suggests that the lanthanum oxide is an art recognized result effective variable. It would have been obvious to one having ordinary skill in the art at the time the invention was

made to choose the instantly claimed ranges through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215. In this case, one would have been motivated to optimize the amounts of lanthanum oxide present in order to obtain a catalyst with improved heat resistance.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba et al. as applied above for claims 3-6, 8-9, 13-21, 23-26, and 28-31 and further in view of Wan.

The teachings of Deeba et al. are as described above for claims 3-6, 8-9, 13-21, 23-26, and 28-31.

The difference between the reference and the claims is that the reference does not disclose the use of a metal monolith comprising stainless steel, as required by claim 7.

Wan (US 5,057,483) discloses a layered catalyst composition useful in the purification of exhaust gases from internal combustion engines. Wan teaches that suitable carriers include honeycomb carriers made of a refractory ceramic material such as cordierite or a refractory metal such as stainless steel (column 4, line 65 – column 5, line 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the teachings of Deeba et al. to include the use of a stainless steel monolith in light of the teachings of Wan. Wan teaches that cordierite

and stainless steel monolithic structures are functionally equivalent carrier compositions in the purification of exhaust gas. It would have been obvious to one of ordinary skill to substitute one known carrier for another functionally equivalent carrier. Because both carriers can be used in the purification of exhaust gases from internal combustion engines, one would have reasonable expectation of success from the combination.

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba et al. as applied above for claims 3-6, 8-9, 13-21, 23-26, and 28-31 and further in view of Andersen et al.

The teachings of Deeba et al. are as described above for claims 3-6, 8-9, 13-21, 23-26, and 28-31.

The difference between the reference and the claims is that the reference does not disclose that the support comprises finely divided particles having a size above 10 to 15 micrometers, as required by claim 22.

Andersen et al. (US 6,022,825) teaches that the catalyst support materials in the washcoat slurry should have a mean particle size of at least 1 to 20 microns in order to promote adherence of the slurry to the substrate (column 4, lines 40-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the teachings of Deeba et al. to include the use of finely divided support materials in light of the teaching by Andersen et al. One would have been motivated to do so in order to ensure that the washcoat adhered to the substrate. Because both compositions are useful in the same process of use and

comprise similar materials, one would have a reasonable expectation of success from the combination.

### ***Allowable Subject Matter***

10. Claims 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach or suggest a catalyst composition wherein the undercoat additionally contains lanthanum oxide, in combination with the other features instantly claimed. Deeba et al. (discussed above) teaches that the undercoat layer may further contain a sulfur sorbent such as cerium oxide (column 8 of '057) but provides no teaching or suggestion to include lanthanum oxide.

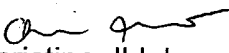
### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (571) 272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Christina Ildebrando  
Patent Examiner  
Art Unit 1725  
8/27/04

CAI  
August 27, 2004